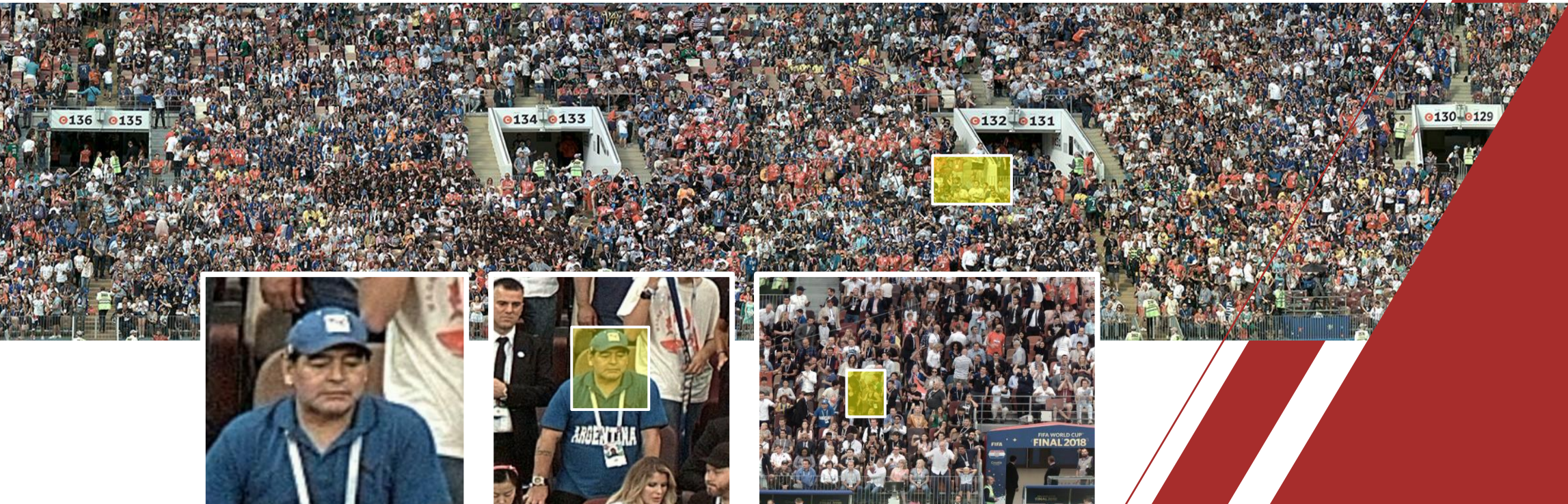


SENSORTEC STADIUMS SOLUTIONS

SENSORTEC STADIUMS SOLUTIONS

SensorTec stadiums solutions are designed to keep stadium crowds under surveillance before, during and after events with a resolution level high enough to identify all individuals. With our solutions, stadium operators can respond quickly to any suspicious or critical situation. Additionally, they can gather irrefutable visual evidence and inform and navigate security staff effectively



SECURITY BEYOND LIMITS



In the few years since 2000, SensorTec has grown into an international company that it is today. We are among the most innovative technological companies in the world, manufacturing and developing intelligent security and surveillance solutions specifically for largescale projects for military, law enforcement, public authorities and private sectors.

We believe that serving the needs of our clients efficiently can only be achieved by delivering complete solutions. In order to achieve that, we design and manufacture all the critical components of our systems, including hardware, software and embedded computer vision. Our entire product range is manufactured and developed in accordance with the highest quality requirements.

SensorTec provides integrated solutions, which combine a wide range of devices, sensors, and software, such as surveillance cameras, surveillance radars, video analytic software and C3. All of our solutions are designed to work in harmony and provide a comprehensive multi-layer approach to deliver situation awareness and interactive intelligence.

KEY FIGURES

300+	TECHNICAL SUPPORT ENGINEER AND TECHNICIAN
4	<p>BRANCHE OFFICES</p> <p>HQ and Manufacturing Facilities: Cambridgeshire, UK. Budapest, Hungary.</p> <p>Sales and Technical Support Offices: Dubai, UAE. Riyadh, KSA.</p>



END-TO-END SENORTEC SOLUTIONS



Borders
Video Surveillance



Airports
Video Surveillance



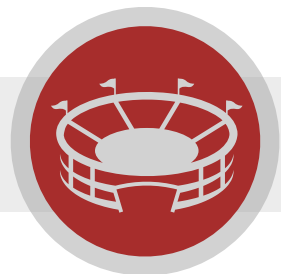
Seaports
Video Surveillance



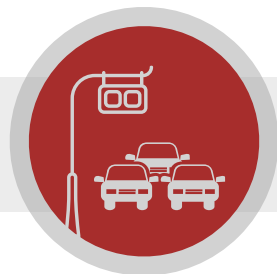
Critical Infrastructure
Video Surveillance



Safe & Smart City
Video Surveillance



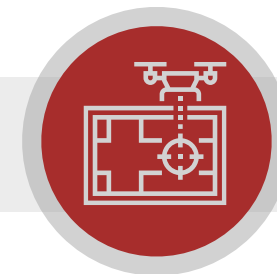
Stadiums & Crowds
Video Surveillance



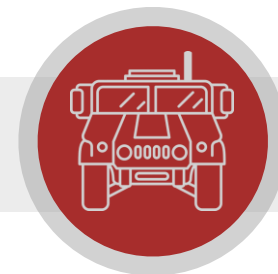
Traffic Management
& Violations Detection



Highway
Video Surveillance



Anti-Drone/UAV
Intelligent System



Mobile (In-Vehicle)
Video Surveillance

SELECTED INTERNATIONAL REFERENCES

BORDERS SURVEILLANCE AND SECURITY

Hungarian Land Borders - Hungary.
 Egyptian Land and Sea Borders - Egypt.
 Kuwaiti Land and Sea Borders - Kuwait.

AIRPORTS SURVEILLANCE AND SECURITY

LaGuardia Airport - New York.
 Hungarian Airport - Hungary.
 Mumbai Airport - India.
 Turkish Airport - Turkey.
 Alexandria Airport - Egypt.

SEAPORTS SURVEILLANCE AND SECURITY

Hungarian Waterway - Hungary.
 Sea Ports - Kuwait.
 Sea Port - UAE.

CRITICAL INFRASTRUCTURE SECURITY

Ministry of Defense - Egypt.
 Egyptian Monument Authorities - Egypt.
 Manarat Al Saadiat Cultural Museum - UAE.
 Private Palace - Kuwait.
 Saudi Arabia Embassy - Geneva.

CITY SURVEILLANCE AND SECURITY

Delhi City - India.
 Luxor City - Egypt.
 Sharm El Sheikh City - Egypt.
 Cairo City - Egypt.
 Port Saeed City - Egypt.

STADIUMS AND CROWDS SURVEILLANCE

Manchester City Stadium - UK.
 Budapest Szusza Ferenc Stadium - Hungary.
 Rijeka Stadium - Croatia.
 Beşiktaş Stadium - Turkey.
 Atatürk Olympic Stadium - Turkey.
 Fenerbahçe Şükrü Saracoğlu Stadium - Turkey.
 Luzhniki Stadium Moscow - Russia.
 Spartak Moscow - Russia.
 Mecca Religious Sites - KSA.
 Dubai Festival Plaza - UAE.
 Pyramids Touristic Area - Egypt.

PERIMETER

SEATING AREA

PARKING

PASSAGEWAYS

ENTRANCE AREA

APPROACHES



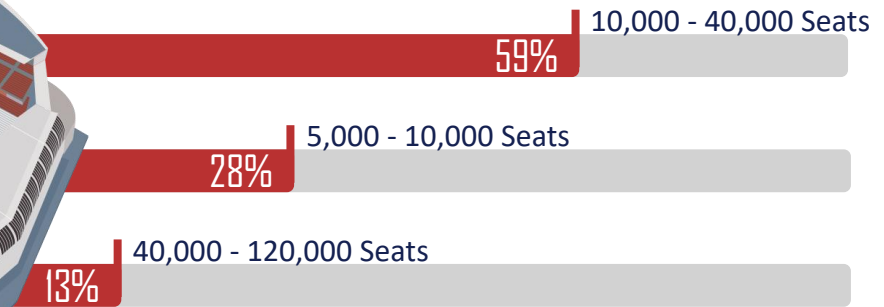


Click to watch the video
Stadiums Solutions - FIFA World Cup 2018.

EXTENSIVE EXPERIENCE IN THE STADIUM INDUSTRY

SensorTec stadiums video surveillance solutions have been deployed in more than 70 stadiums around the globe to date. Among many prestigious venues, the main stadiums of **2018 FIFA WORLD CUP** in **Russia** have been equipped with the SensorTec systems, which proved its capabilities during the games. More than a decade has passed since our first stadium project, meanwhile the system has been continuously and progressively evolved. Now it is the 4th generation of the solution.

70+
STADIUMS WORLDWIDE
FIFA COMPLIANCE



PIONEERING TECHNOLOGIES BEHIND SENORTEC STADIUMS SOLUTIONS

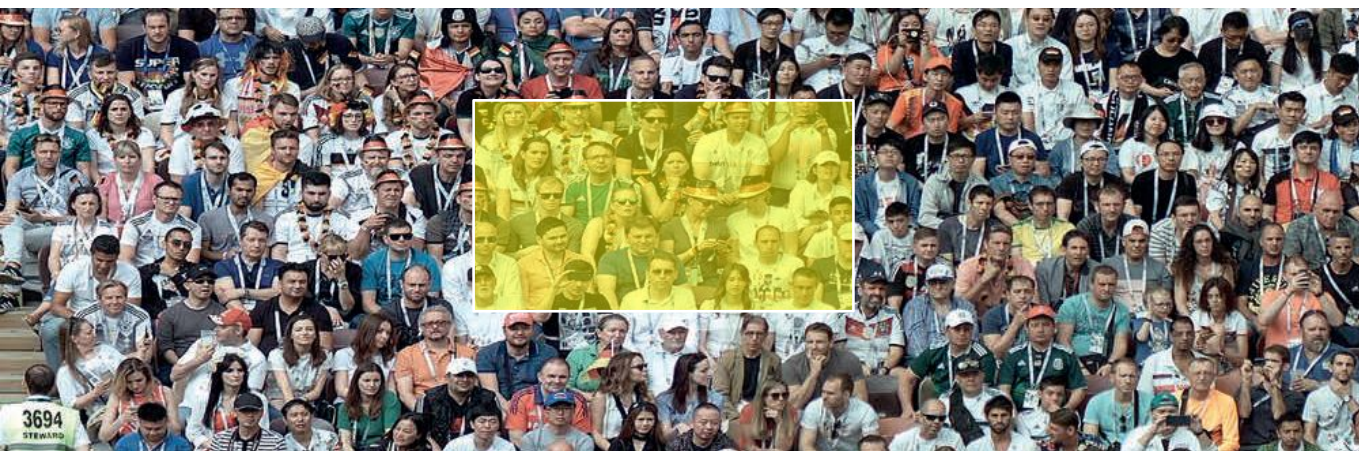
SensorTec Panoramic Technology

SensorTec panoramic technology makes it possible to geometrically stitch images of SensorTec visible light and thermal sensors. The images are taken in a synchronized fashion which precludes the possibility of duplicated or hidden objects at the stitching borders. White balance and tone correction algorithms smoothen the color gradient between the images.

SensorTec Virtual Panoramic Technology

Entire seating areas of even the largest stadiums can be covered by only few virtual panoramic cameras, which consist of several individual high-resolution cameras. They can be considered as multi-sensor panoramic cameras, as the images of the individual ones are stitched together. A single virtual panoramic camera delivers 800-320 MP resolution depending on how many cameras belong to a camera group. Our specially developed stitching technology allows for precise, real-time stitching of the video content.

The individual images are not just overlapped at the image borders, but geometrically merged. As the cameras take their images synchronized, the displayed video stream is free of disturbing glitches like object duplication or disappearance. We also provide white balance correction at the image borders, providing a smooth color gradient throughout the panoramic image.



PIONEERING TECHNOLOGIES BEHIND SENORTEC STADIUMS SOLUTIONS

SensorTec Panoramic and PTZ Cameras Cross Mapping

SensorTec high-end 2-6 MP PTZ cameras can complete panoramic or virtual panoramic cameras at the seating area. They serve as optical zoom extensions for the main panoramic camera system. They operate together, thanks to our panoramic and PTZ cameras cross mapping function.

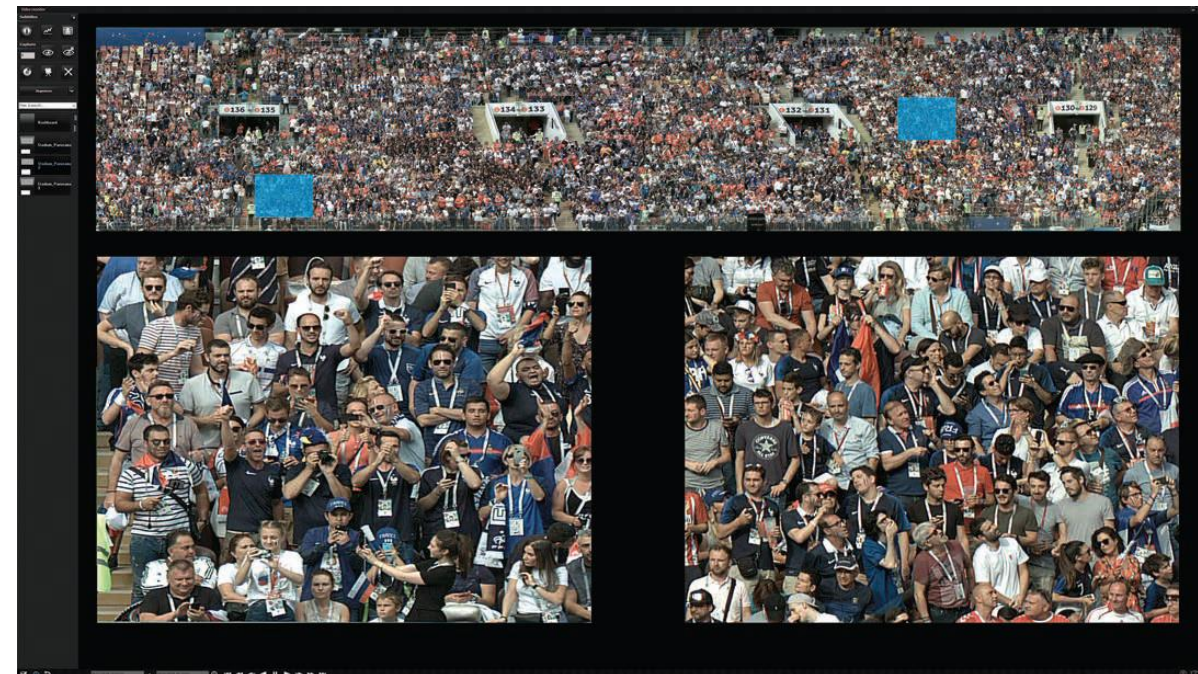
Operators can control PTZ cameras by selecting the area of interest in the panoramic image. PTZ cameras accurately zoom in on the desired area based on previously associated image coordinates. They are able to deliver even 1000 ppm resolution on the focused area. As operators see more visual details of a situation, they can provide more information to security guards so they can handle the situation more effectively.

SensorTec Intelligent Storage Management Technology

SensorTec storage system continuously records the videos. Thanks to our Ageing Technology, storage period of video streams can be greatly prolonged. The system intelligently drops frames from the video stream according to a configured period. As the JPEG2000 stream consists only intra-frame images, the footage will be still available after video stream ageing, but with reduced fps.



[Click to watch the video](#)
Stadiums Solutions - PTZ Cross-Mapping.



YOU NEED OUR SYSTEM, IF YOU WOULD LIKE TO...



[Click to watch the video](#)
Stadiums Solutions - Multiple Zoom Windows.



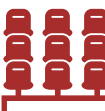
ONE MANUFACTURER, MULTIPLE TECHNOLOGIES

We provide multiple technologies, you can guarantee the quality and consistency of our systems and trust their delivery and service level.



MODULAR MULTI-LAYERED SOLUTIONS

Integrating multiple systems including panoramic cameras, EO/IR PTZ cameras, PIDS,



MONITOR ENTIRE VAST AREAS

The entire seating area can be monitored with only few SensorTec panoramic cameras, even in the largest stadiums.



FACE RECOGNITION AT ALL SEATS

Our panoramic cameras delivers video streams with 80-320 MP resolution, allowing face recognition at all seats in the stadium. Additional PTZ cameras further extend the available resolution, providing 1000 ppm resolution in the seating area.



PANORAMIC AND PTZ CAMERAS FUSION

Our solution can be completed with 6MP PTZ cameras, which function as optical zoom extensions. This way they can be controlled by selecting the area of interest on the panoramic images.



MULTIPLE ZOOM WINDOWS

Operators can use multiple zoom windows on each panoramic image. They can seamlessly zoom in and pan certain areas to track individuals in the seating bowl.



IRREFUTABLE VISUAL EVIDENCE

Our 20 fps panoramic streams consist of only JPEG2000 key frames. Each frame serve as irrefutable visual evidence during investigation.



FIFA and UEFA COMPLIANCE

SensorTec stadiums solutions comply with FIFA and UEFA regulations with continuous high resolution footage of all seats.



HEALTH REPORT

The system monitors its own condition and reports early warnings in case it measures any suspicious values. This way major failures can be easily avoided.



CENTRALIZED REMOTE OPERATION

Thanks to SensorTec Match Operation Center, multiple stadiums can be managed from a distant, centralized monitoring room.

WHAT DIFFERS OUR STADIUMS SOLUTIONS



Click to watch the video
Stadiums Solutions - Virtual Panoramic Camera.

- End-to-end solutions consist of panoramic cameras, stand-alone cameras, network video recorders and control center at a competitive price.
- Our solutions ensure safety and security within the entire venue and at the surrounding areas as well.
- Our solutions are fully integrated with 3rd party systems, allowing you to keep your existing systems and integrate them into ours.
- Our solutions are easily expandable, so you don't have to replace them in case of future developments.
- In system design, resolution levels can be tailored to customer needs and/or any authority regulations, ranging from 250ppm to higher ones.
- SensorTec applies the JPEG2000 video compression standard in order to achieve the highest video quality and utilize the full resolution during monitoring with effective bandwidth usage.
- Our solutions are able to overcome challenging stadium environmental factors like hazy weather, which hinders visibility and disturbing lens flares caused by stadium reflectors.
- Stadium event management using dual system configuration for events and periods between events with long storage periods, thanks to intelligent frame reducing technology.



SENORTEC STADIUMS SOLUTIONS

FINANCIAL BENEFITS



REDUCED INFRASTRUCTURE COST

Only few cameras are needed to cover an entire stadium, as a result no need to install numerous poles. The network infrastructure is far less complex and cabling is also fast and easy.



LONG LIFETIME

SensorTec leading-edge technologies ensure the system avoids both physical and technological obsolescence for a long time.



UNINTERRUPTED OPERATION

SensorTec provides uninterrupted system availability as all their components are developed to operate with high MTBF.



DESIGNED TO LAST

SensorTec systems can withstand intense weather conditions with metal constructions and built-in heating and cooling systems.



NO NEED FOR FREQUENT MAINTENANCE

SensorTec hardware components are capable of self maintenance, thanks to their built-in self-cleaning and deicing systems.



COST-EFFICIENT EXPANSION ON DEMAND SYSTEM

Our system can be flexibly and incrementally expanded regarding both the scope of devices and the system functionality.



LESS MANPOWER

As vast areas can be monitored with much fewer cameras that provide far better spatial orientation for viewers and also VCA based Real-Time Decision Making Support, far less operators are needed for efficient surveillance.



DESIGNING YOUR PROJECT



3D MODEL OF VISUAL COVERAGE

SensorTec starts each project with a customized 3D plan, which helps optimize camera arrangement, the necessary resolution and coverage at each stadium area, according to project needs.



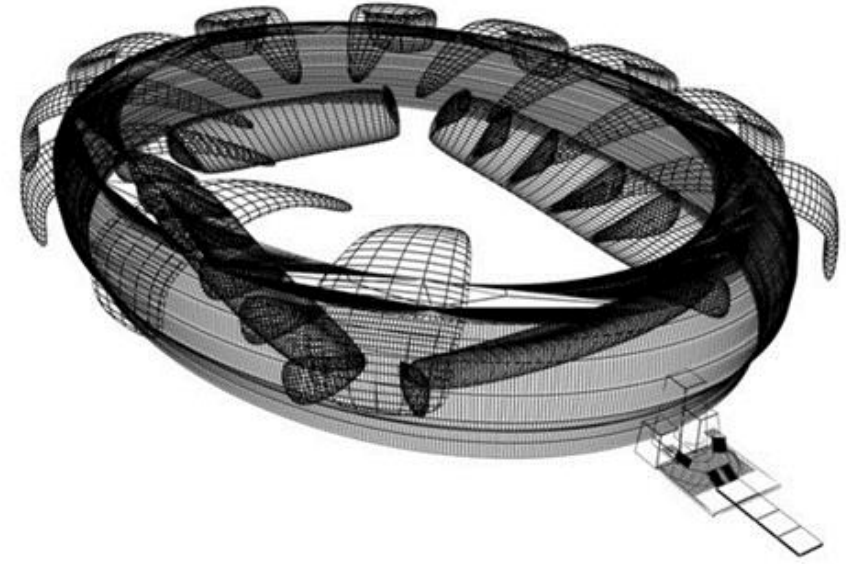
ADAPTABLE SYSTEM STRUCTURE

We always consider the specific structure and characteristics of each stadium to best adapt the system for the current project. Moreover, our system has a flexible hardware structure that can be easily rearranged in case of future stadium developments.



SYSTEM EXTENSION

SensorTec stadiums solutions are designed to be flexible for future developments. Both the covered areas and also system functionality can be extended easily on demand.



SEATING AREA

PANORAMIC CAMERAS
VIRTUAL PANORAMIC CAMERAS
PTZ CAMERAS



CAMERA VLAN



OUTSIDE THE SEATING AREA
2 - 20MP CAMERAS
PTZ CAMERAS



C2 VLAN



SYSTEM ARCHITECTURE

MONITORING CROWDS FROM THE BEGINNING TO THE END



SensorTec stadiums solutions can cover an entire stadium as well as its perimeter. Therefore crowds can be observed even before entering stadium gates. Once they step inside the stadium their movements are monitored using PTZ and stand-alone cameras until they take their places in the seating area.

Once a game is ended, operators can track the crowd as they leaving the stadium and the surrounding perimeter area. In any case of a disorderly conduct, operators can react fast and instruct the security staff to take necessary measures in order to prevent the escalation of the situation.

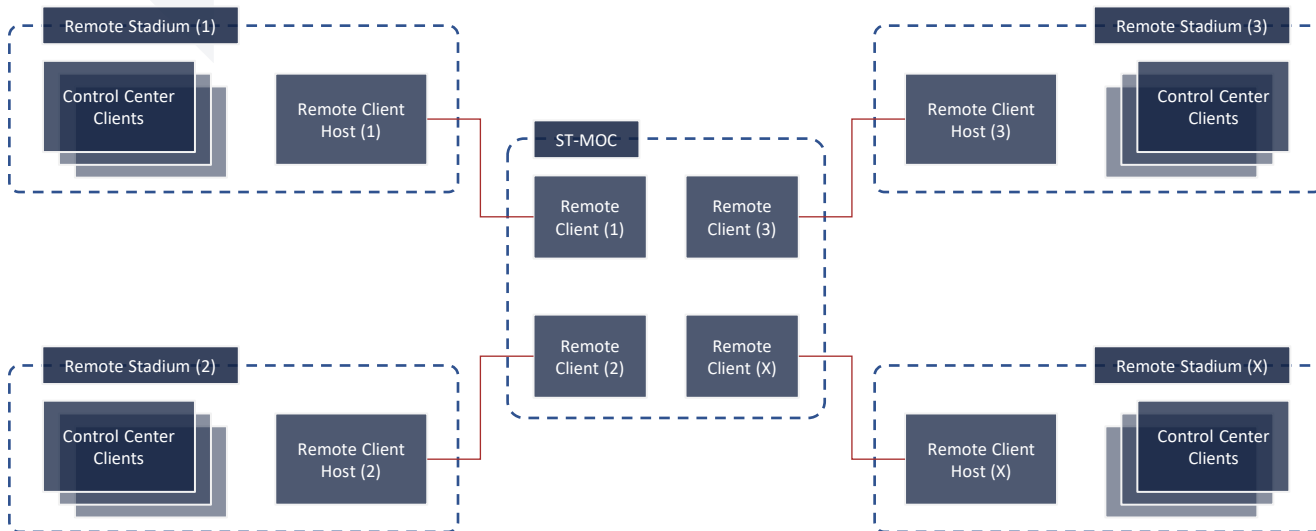
In the seating bowl, panoramic cameras, virtual panoramic cameras and high-end PTZ cameras take videos of all spectators.



SENORTEC MATCH OPERATION CENTER

SensorTec Match Operation Center (ST-MOC) is a centralized monitoring solution that can be installed when multiple stadiums are equipped with our stadiums solutions across a city or a country, and surveillance should be available from a centralized monitoring room too.

Using MOC, all stadiums are remotely accessible with full functionality using a simple client application. The solution allows to manage multiple stadiums at the same time from a centralized unit.



INTEGRATION WITH 3RD PARTY SYSTEMS

Our solutions seamlessly integrate any ONVIF standard cameras that are already installed in the stadium, such as those that monitor the internal corridors or gates.

Their images are going to be displayed on a customizable monitor profiles of the SensorTec Control Center and their functions will be available according to ONVIF directives.



KEY SYSTEM COMPONENTS



40° - 180° 40MP - 320MP
Panoramic Cameras



20MP
Virtual Panoramic Camera



1MP - 6MP
PTZ IR Camera



SensorTec 4th Generation
Indoor Rack-Mount NVR



SensorTec Control Center
with Stadium Features



CONTACT US



SensorTec Security Systems

www.sensortec-eu.com | sales@sensortec-eu.com



SensorTec UK

Sydney House,
62 Lancaster Way, Ely,
Cambridgeshire, UK.
+44 1353 523549

SensorTec UAE

701 Thuraya Tower 1,
Dubai Internet City,
Dubai, UAE.
+971 4 367 0351 | +971 50 496 1750

SensorTec KSA

Prince Muhammad Ibn Saad
Ibn Abdulaziz Rd,
Riyadh, KSA.
+966 53 222 2848